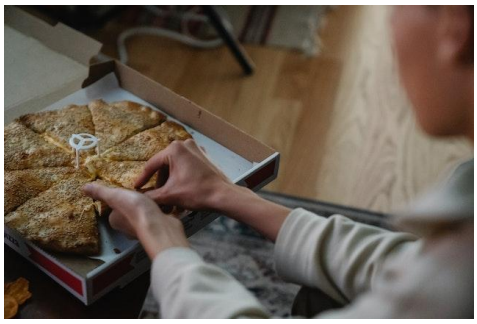
研究：三餐晚吃 4 小时更易诱发肥胖 When you eat may dictate how hungry you are, study says

对于现代人，一般来说，早、中、晚三餐时间大约定在 7:30、12:30、18:30。当然，由于生活轨迹和个人习惯的不同，每个人的三餐时间自然有所差异。那么晚点吃饭到底为啥不好？不也是一天三顿吗？

近日，一项发表在《细胞代谢》杂志的最新研究给出了明确回答：吃饭时间真的很重要！更晚地吃饭（如一天三顿的摄入时间比别人迟 4 个小时），会从三大方面诱发肥胖：增加食欲、降低能量消耗、改变脂肪组织基因的表达。吃太晚真的容易长胖，快把“时差”倒回来！

 [Photo/pexels]

We all know that eating later in the day isn’t good for our waistlines, but why? A new study weighed in on that question by comparing people who ate the same foods – but at different times in the day.

众所周知，吃饭晚更容易长胖，但这是为什么呢？一项新研究对此给出了科学依据。该研究比较了在一天内不同时段进食相同食物的人。

“Does the time that we eat matter when everything else is kept consistent?” said first author Nina Vujović, a researcher in the division of sleep and circadian disorders at Boston’s Brigham and Women’s Hospital.

该研究论文第一作者、波士顿布里格姆妇女医院睡眠和生物节律紊乱科研究员妮娜·武乔维奇提出：“当其他因素都相同时，吃饭的时间有影响吗？”

晚进食会使感到更饥饿的可能性翻倍

The answer was yes – eating later in the day will double your odds of being hungrier, according to the study published in the journal *Cell Metabolism*.

答案是：是的。这篇发表在《细胞代谢》杂志上的研究论文显示，吃饭晚会使感到更饥饿的可能性翻倍。

“We found that eating four hours later makes a significant difference for our hunger levels, the way we burn calories after we eat, and the way we store fat,” Vujović said. “Together, these changes may explain why late eating is associated with increased obesity risk reported by other studies and provide new biological insight into the underlying mechanisms.”

武乔维奇说：“我们发现，晚 4 个小时进食对饥饿程度、进食后燃烧卡

路里的方式以及储存脂肪的方式都有显著影响。总之，这些变化可能解释其他研究发现的吃饭晚与肥胖风险增加的关联，并为其中的潜在机制提供了新的生物学见解。”

The study provides support for the concept that circadian rhythm, which influences key physiologic functions such as body temperature and heart rate, affects how our bodies absorb fuel, researchers said.
研究人员称，这项研究为以下观点提供支持：生物节律影响体温心率等关键生理功能，影响身体吸收能量的方式。

The study does show eating later results in “an increase in hunger, impacts hormones and also changes gene expression, especially in terms of fat metabolism with a tendency towards less fat breakdown and more fat deposition,” said Dr. Bhanu Prakash Kolla, a professor of psychiatry and psychology at the Mayo Clinic College of Medicine and a consultant to Mayo’s Center for Sleep Medicine and Division of Addiction Medicine.
巴努·普拉卡什·科拉博士称，该研究确实表明，吃得晚会导致“饥饿感增加，影响激素水平，也会改变基因表达，特别是在脂肪代谢方面，会导致脂肪分解减少，脂肪沉积增多。”科拉是梅奥临床医学院精神病学和心理学教授、梅奥睡眠医学中心和成瘾医学部顾问。

The study was small – only 16 overweight or obese people – but carefully planned to eliminate other potential causes of weight gain, the authors said.
研究人员称，这项研究规模较小，参与者只有 16 名超重或肥胖人士，但精细设计消除了导致体重增加的其他潜在原因。

"While there have been other studies investigating why late eating associates with an increased risk for obesity, this may be the most well controlled, including strictly controlling the amount, composition and timing of meals, physical activity, sleep, room temperature and light exposure," said senior author Frank Scheer, director of the Medical Chronobiology Program in the Brigham's Division of Sleep and Circadian Disorders.
布里格姆妇女医院睡眠和生物节律紊乱科医学生物钟项目主任、研究主要作者弗兰克·谢尔说："虽然有研究探索了吃饭晚与肥胖风险增加的关系，但我们的研究可能是变量控制最严格的。包括严格控制进食量、餐食构成和用餐时间、体力活动、睡眠、室温和光照。"

All participants were in good health, with no history of diabetes or shift work, which can affect circadian rhythm, and had regular physical activity. Each person in the study kept to a strict healthy sleep/wake schedule for about three weeks and were provided with prepared meals at fixed times for three days before the lab

experiment began.

所有参与者健康状况良好，没有糖尿病史或值班工作史（这些因素可能会影响生物节律），并且会进行规律的体育锻炼。所有实验参与者都有严格的健康作息时间表，持续约三周，并在实验室实验开始前的三天内，在固定的时间吃准备好的餐食。


[Photo/pexels]

Participants were then randomized into two groups. One group ate calorie-controlled meals at 8 am, noon and 4 pm, while the other ate the same meals four hours later, at noon, 4 pm and 8 pm for the six days reported in the study. Measures of hunger and appetite were gathered 18 times each while tests for body fat, temperature and energy expenditures were gathered on three separate days.

参与者随后被随机分为两组。在六天中，一组在上午 8 点、中午 12 点和下午 4 点吃控制热量的饭菜，另一组晚四小时进餐，分别在中午 12 点、下午 4 点和晚上 8 点吃同样的饭菜。研究人员分别收集了 18 次两

组参与者的饥饿感和食欲的测量值，并在不同的三天里检测他们的体脂、温度和能量消耗。

After a break of a few weeks, the same participants reversed the procedure – those who had eaten earlier moved to the late eating group and vice versa, thus using each person as their own control.
休息几周后，上述参与者重复相反的程序，那些吃饭较早的人改为较晚进食，反之亦然，将每个人作为自己的对照。

Results showed that hunger pangs doubled for those on a night-eating regime. People who ate later in the day also reported a desire for starchy and salty foods, meat and, to a lesser extent, a desire for dairy foods and vegetables.
结果表明，晚进食的人饥饿感增加了一倍。晚进食的人称，他们渴望吃含淀粉和咸味的食物、肉，相比之下，没那么想吃乳制品和蔬菜。

晚进食会影响食欲调节激素，从而增加食欲

By looking at the results of blood tests, researchers were able to see why: Levels of leptin, a hormone which tells us when we feel full, were decreased for late eaters versus early eaters. In comparison, levels of the hormone ghrelin, which spikes our

appetite, rose.

通过查看血检结果，研究人员发现了原因：与早进食者相比，晚进食者的瘦素水平降低，这是一种控制饱腹感的激素。相比之下，刺激食欲的激素胃促生长素水平升高。

“What is new is that our results show that late eating causes an increase in the ratio of ghrelin and leptin averaged across the full 24-hour sleep/wake cycle,” Scheer said. In fact, the study found that the ratio of ghrelin to leptin rose by 34% when meals were eaten later in the day.

谢尔说：“我们研究中的新发现是，晚进食会导致整个生物节律中的胃促生长素和瘦素比升高。”研究发现，晚进餐时胃促生长素和瘦素比升高了 34%。

“These changes in appetite-regulating hormones fits well with the increase in hunger and appetite with late eating,” Scheer said.

谢尔说：“这些食欲调节激素的变化与晚进食导致的饥饿感和食欲的增强非常吻合。”

晚进食会改变脂肪组织的基因表达，更利于脂肪储存

When participants ate later in the day they also burned calories at a slower rate than when they ate at earlier times. Tests of their body fat found changes in genes that would impact how fat is burned or stored, the study found.
当参与者吃饭较晚时，他们消耗的卡路里也比早吃饭时慢。研究发现，通过检测参与者身体脂肪发现，基因的变化会影响脂肪的燃烧或储存方式。

“These changes in gene expression would support the growth of fat tissue by formation of more fat cells, as well as by increased fat storage,” Scheer said.
谢尔说：“基因表达发生变化，将通过形成更多的脂肪细胞以及增加脂肪储存来支持脂肪组织的生长。”